

CLAIMS

We claim:

1. (Currently Amended) A brake system for an elevator car ~~(16)~~ comprising:
a ropeless and sheaveless stopping mechanism ~~(10)~~ responsive to an electronic control signal to automatically stop an elevator car ~~(16)~~ under predetermined conditions;
at least one spring for moving said stopping mechanism from a non-deployed position to a deployed position in response to said electronic control signal wherein said at least one spring is resettable from a remote location in response to an electronic reset signal; and
an actuator operably coupled to said at least one spring to return said at least one spring and said stopping mechanism to the non-deployed position in response to said electronic reset signal wherein said at least one spring is selectively decoupled from at least one of said stopping mechanism and said actuator.
2. (Currently Amended) The system of claim 1 wherein said electronic control signal is generated ~~stopping mechanism (10) is resettable from a remote location in~~ response to an excessive speed condition when an elevator car speed exceeds a predetermined threshold~~electronic reset signal.~~
3. (Currently Amended) The system of claim 2 wherein said stopping mechanism ~~(10)~~ includes at least one set of safety wedges ~~(18)~~ adapted to be positioned on opposing sides of a guide rail ~~(20)~~ and a safety housing ~~(12)~~ that cooperates with said set of safety wedges ~~(18)~~ to apply a braking force to said guide rail ~~(20)~~ when said safety wedges ~~(18)~~ move from the a non-deployed position to the a deployed position.
4. (Currently Amended) The system of claim 3 wherein said stopping mechanism ~~(10)~~ includes a first latching device ~~(26)~~ for holding said safety wedges ~~(18)~~ in the said non-deployed position, and a second latching device ~~(28)~~ for locking said safety wedges ~~(18)~~ in the said

deployed position, and wherein said at least one spring (24) is associated with said safety wedges (18) to move said safety wedges (18) from the said non-deployed position to the said-deployed position once said first latching device (26) is released in response to said electronic control signal.

5. (Currently Amended) The system of claim 4 wherein said first (26) and second (28) latching devices each comprise a solenoid.

6. (Currently Amended) The system of claim 4 ~~including an~~ wherein said actuator (22a) operably coupled to said at least one spring (24) to return returns said at least one spring (24) and the said corresponding safety wedges (18) to the a non-deployed position in response to said electronic reset signal.

7. (Currently Amended) ~~The system of claim 6 including~~ A brake system for an elevator car (16) comprising:

a ropeless and sheaveless stopping mechanism (10) responsive to an electronic control signal to automatically stop an elevator car (16) under predetermined conditions; and

at least one spring for moving said stopping mechanism from a non-deployed position to a deployed position in response to said electronic control signal wherein said at least one spring is resettable from a remote location in response to an electronic reset signal, and wherein said electronic control signal is generated in response to an excessive speed condition when an elevator car speed exceeds a predetermined threshold;

at least one set of safety wedges adapted to be positioned on opposing sides of a guide rail and a safety housing that cooperates with said set of safety wedges to apply a braking force to said guide rail when said safety wedges move from the non-deployed position to the deployed position;

said stopping mechanism including a first latching device for holding said safety wedges in the non-deployed position and a second latching device for locking said safety wedges in the

deployed position, and wherein said at least one spring is associated with said safety wedges to move said safety wedges from the non-deployed position to the deployed position once said first latching device is released in response to said electronic control signal;

an actuator operably coupled to said at least one spring to return said at least one spring and the safety wedges to the non-deployed position in response to said electronic reset signal;
and

a connector (32) for connecting the at least one spring (24) to said actuator (22a), wherein said connector (32) is automatically disengaged from said actuator (22a) when said safety wedges (18) are in the said non-deployed position and is automatically engaged to said actuator (22a) when said safety wedges (18) are in the said deployed position.

8. (Currently Amended) The system of claim 3 wherein said including at least one spring (24) comprises a plurality of springs with at least one spring being associated with each of said safety wedges (18) and wherein a connector (32) for connects ing said springs (24) to an said actuator (22b) that returns said springs to a non-deployed position in response to said electronic reset signal.

9. (Currently Amended) The system of claim 8 wherein said actuator (22b) comprises a carrier plate mounted for movement with said connector (32), a motor (40) supported by a car frame (14), a gear box (42) associated with an output of said motor (40), and an electromagnet (46) coupled to a linear screw (44) driven by said gear box (42), said carrier plate (48) being selectively coupled with said electromagnet (46) when said screw (44) moves said electromagnet (46) into engagement with said carrier plate (48) to reset said carrier plate (48) after said carrier plate (48) has been deployed.

10. (Currently Amended) The system of claim 1 including at least one sensor for monitoring elevator car speed, said at least one sensor communicating with an elevator control that generates said electronic control signal for controlling movement of the elevator car, and wherein stopping

mechanism ~~(10)~~ comprises an emergency stopping mechanism being responsive for an elevator safety system, said emergency stopping mechanism being responsive to said electronic control signal to automatically stop the elevator car ~~(16)~~ when the elevator a car speed exceeds a predetermined threshold speed.

11. (Currently Amended) A method for activating a braking system for an elevator car comprising the steps of:

- (a) identifying a need for an elevator braking operation; and
- (b) generating an electronic control signal to activate a ropeless and sheaveless stopping mechanism ~~(10)~~ to prevent movement of an elevator car ~~(16)~~ subsequent to step (a);
- (c) moving the stopping mechanism from a non-deployed position to a deployed position with at least one spring in response to the electronic control signal;
- (d) resetting the at least one spring to a non-deployed position from a remote location in response to an electronic reset signal; and
- (e) coupling an actuator to the at least one spring to return the at least one spring and the stopping mechanism to the non-deployed position in response to the electronic reset signal wherein the at least one spring is selectively decoupled from at least one of the stopping mechanism and the actuator.

12. (Currently Amended) The method of claim 11 including the step of generating the electronic control signal in response to an excessive speed condition identified during step (a) when an elevator car speed exceeds a predetermined threshold~~selectively resetting the stopping mechanism ~~(10)~~ from a remote location subsequent to performing step (b).~~

13. (Currently Amended) The method of claim 11 wherein the stopping mechanism ~~(10)~~ comprises an emergency stopping mechanism and step (a) further includes identifying an undesirable operating condition.

14. (Currently Amended) The method of claim 13 including the steps of fixing a safety housing ~~(12)~~ for movement with the elevator car ~~(16)~~, positioning safety wedges ~~(18)~~ on opposing sides of a guide rail ~~(20)~~, and mounting the safety wedges ~~(18)~~ and housing ~~(12)~~ for movement with the elevator car ~~(16)~~ and wherein step (b) includes moving the safety wedges ~~(18)~~ from the a-non-deployed position with the at least one spring ~~to a-deployed position~~.

15. (Currently Amended) The method of claim 14 including the step of forcing the safety wedges ~~(18)~~ into frictional engagement with the guide rail ~~(20)~~ as the safety wedges ~~(18)~~ move from the non-deployed position to the deployed position.

16. (Currently Amended) The method of claim 15 ~~including wherein the~~ at least one spring comprises a plurality of springs, and including the steps of latching the safety wedges in the non-deployed position with a first latch mechanism ~~(26)~~, coupling at least one spring ~~(24)~~ to each of the safety wedges ~~(18)~~ to move the safety wedges ~~(18)~~ from the non-deployed position to the deployed position once the first latching device ~~(26)~~ is released in response to the electronic control signal, and latching the safety wedges ~~(18)~~ in the deployed position with a second latch mechanism ~~(28)~~ once the first latching mechanism ~~(26)~~ is released.

17. (Currently Amended) The method of claim 16 including the step of connecting the springs ~~(24)~~ to a linear actuator ~~(22a)~~ to return the springs to the a-non-deployed position in response to the an electronic reset signal.

18. (Currently Amended) The method of claim 15 including the steps of coupling the at least one spring ~~(24)~~ to the safety wedges ~~(18)~~, mounting a carrier plate ~~(48)~~ for movement with the springs ~~(24)~~, and controlling movement of the carrier plate ~~(48)~~ with a solenoid actuator ~~(22b)~~.

19. (Currently Amended) The method of claim 18 including the steps of activating the solenoid actuator ~~(22b)~~ to overcome the spring force of the at least one springs ~~(24)~~ by holding the carrier plate ~~(48)~~ and the safety wedges ~~(18)~~ in the non-deployed position with an electromagnet ~~(46)~~, and releasing the electromagnet ~~(46)~~ from an initial position causing the at least one spring ~~spring~~ ~~(24)~~ to move the safety wedges ~~(18)~~ into the deployed position in response to identification of an undesirable elevator operating condition.

20. (Currently Amended) The method of claim 19 including the steps of driving the electromagnet ~~(46)~~ into engagement with the carrier plate ~~(48)~~ in response to the electronic ~~a~~ reset signal, activating the electromagnet ~~(46)~~ to couple the carrier plate ~~(48)~~ to the electromagnet ~~(46)~~, and compressing the at least one spring ~~s~~ ~~(24)~~ by moving the carrier plate ~~(48)~~ and electromagnet ~~(46)~~ to the initial position to return the safety wedges ~~(18)~~ to the non-deployed position.

21. (Previously Presented) The method of claim 20 further including the step of coupling the electromagnet to an electric motor and gear box to control linear movement of the electromagnet.

22. (Cancelled)

23. (Previously Presented) The system of claim 1 wherein the elevator car comprises an enclosure that is supported on an elevator frame movable within a hoistway along elevator rails that are positioned on opposite sides of the elevator car, and wherein the stopping mechanism is associated with at least one of the elevator rails.

24. (Cancelled)